SR 90 South SPAR and Sunset I/C Modifications
2004 MONITORING REPORT

USACE NWP 200300572 and 1999011653

Wetland Assessment and Monitoring Program

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Environmental Services Office

SR 90 South SPAR and Sunset I/C Modifications
2004 Monitoring Report

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List of Acronyms

Acronym	Meaning
CI	Confidence Interval
ECY	Washington State Department of Ecology
FAC	Facultative Indicator Status
FACW	Facultative Wetland Indicator Status
IP	Individual Permit
MP	Mile Post
NWP	Nationwide Permit
OBL	Obligate Wetland Indicator Status
SR	State Route
USACE	United States Army Corps of Engineers
WDFW	Washington Department of Fish and Wildlife
WSDOF	Washington Department of Fisheries
WSDOT	Washington State Department of Transportation

Introduction

Infrastructure improvements including highway construction projects, highway interchanges, and bridges have accompanied economic and population growth in the state of Washington. The Washington State Department of Transportation (WSDOT) evaluates the potential for degradation of critical areas that may result from these infrastructure improvements. WSDOT strictly complies with applicable federal, state, and local environmental regulations, including the Clean Water Act and the state "no net loss" policy for wetlands (Executive Order 89-10). Generally, mitigation sites are planned when transportation improvement projects adversely affect critical and/or sensitive areas. The WSDOT Wetland Assessment and Monitoring Program monitors these mitigation sites as a means of evaluating compliance with permit conditions and tracking site development.

The purpose of this document is to report the status of the SR 90 South SPAR and Sunset I/C Modifications mitigation site with respect to permit compliance and success standards for 2004 (Map 1). Following a general description of our process and methods, this report presents 2004 monitoring results and management activities for this site.

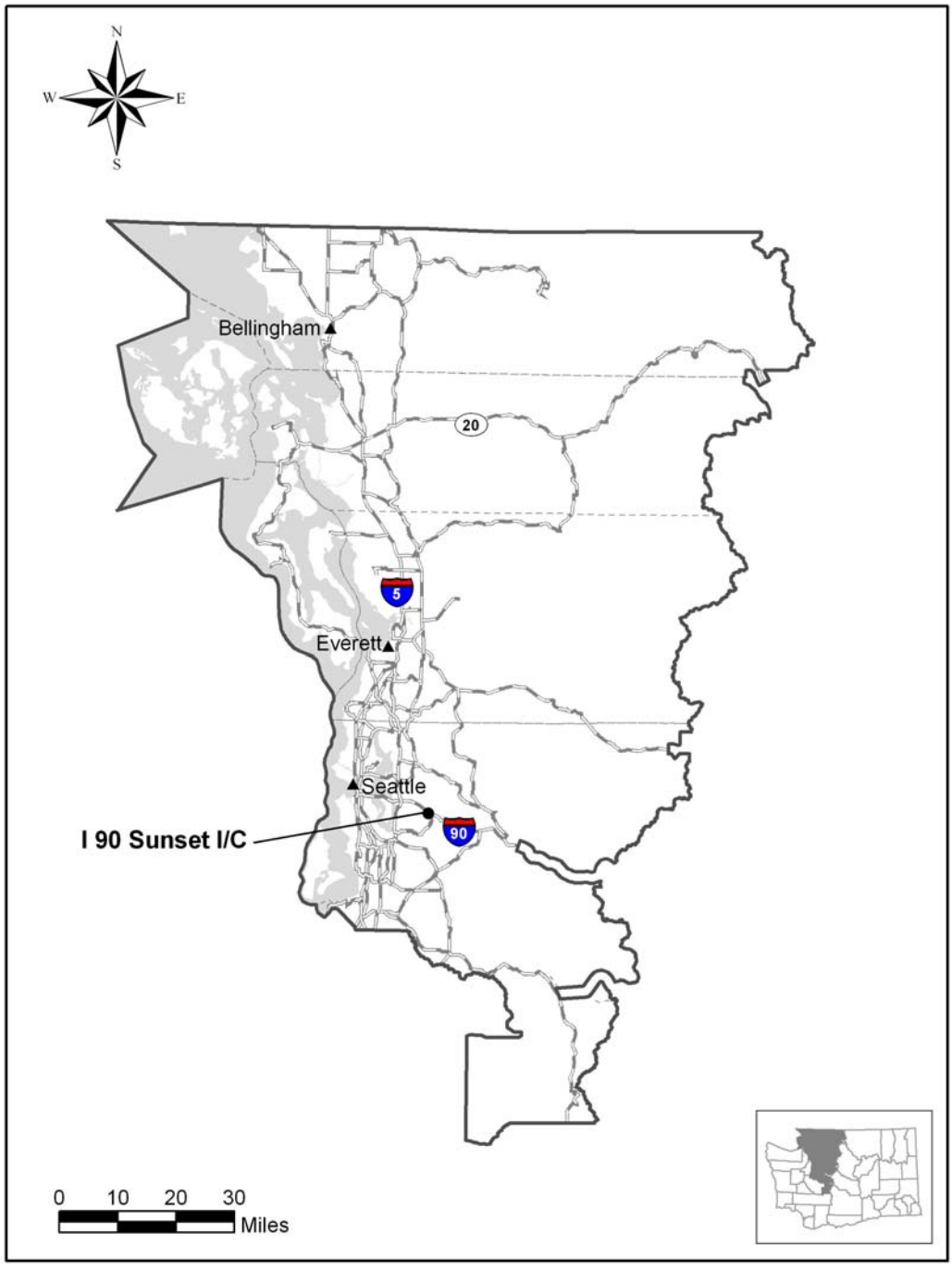
Process

Monitoring typically begins the first spring after a site is planted and continues for the time period designated by the permit or mitigation plan. The monitoring period generally ranges from three to ten years. In special cases sites may be monitored beyond the designated monitoring period.

Monitoring activities are driven by site-specific success standards detailed in the mitigation plan or permits. Data are collected on a variety of environmental parameters including vegetation, soils, hydrology, and wildlife. When data analysis is complete, information on site development is communicated to region staff to facilitate management activities as part of an adaptive management process. Monitoring reports are issued to regulatory agencies and published on the web at:

http://www.wsdot.wa.gov/environment/wetmon/MonitorRpts.htm

Map 1 SR 90 South SPAR and Sunset I/C Modifications Site Location



SR 90 S. SPAR & Sunset I/C Modification

USACE NWP 200300572/1999011653

Photo 1.1 **Surface water in the created emergent wetland at the SR 90 Sunset mitigation site (10 May 2004).**

SR 90 South SPAR and Sunset I/C Modifications
USACE NWP 200300572 and 1999011653

This report summarizes management and monitoring activities completed by the Washington State Department of Transportation (WSDOT) at the SR 90 South SPAR and Sunset I/C Modifications (SR 90 Sunset) mitigation site from Fall 2003 through Fall 2004 (Photo 1.1). The Wetland Assessment and Monitoring Program obtained data to compare to first year success standards (2004). Activities include surveys of the planted wetland and buffer plant communities, and wetland hydrology. Table 1.1 provides general site information and Table 1.2 summarizes this year's monitoring results.

Table 1.1 General Information for the SR 90 South SPAR and Sunset I/C Modifications Mitigation Site

Contract Name and Number	SR 90 Sunset I/C Modifications - Stage 2 - C6818			
USACE NWP 13 and 14	200300572 and 1999011653			
WDFW HPA Permit Number	00-E4476-03			
NOAA/NMFS ESA Section 7 Formal Consultation NMFS Log No.	WSB-99-134			
USFWS Final BO Reference No.	I-3-00-F-0642			
Township/Range/Section (impact)	T.24N/R.6E/S.27 and S.28			
Mitigation Location	Around Schneider Creek, North of Newport Way, King Co.			
Construction date	Grading and planting complete spring 2003			
Monitoring Period	2004 to 2013			
Year of Monitoring	1 of 10			
Area of Project Impact	0.15 acres			
Type of Mitigation	Wetland Enhancement	Wetland Creation	Buffer	Preserve
Area of Mitigation	0.17 acres	0.30 acres	1.40 acres	1.85 acres

Table 1.2 Monitoring Summary for the SR 90 South SPAR and Sunset I/C Modifications Mitigation Site

Performance Criteria	2004 Results[1]
Success Standard	
1. Wetland hydrology	Present
2. At the end of the first growing season all planted material shall be alive and healthy (all dead material will be replaced).	80% survival, re-planted December 2004
3. The mitigation area shall contain no more than 25% areal (*sic*) cover by reed canarygrass or Himalayan blackberries at any point during the monitoring period.	5% ($CI_{80\%}$ = 3% - 8%)
4. All King County-listed Class A, B-designate and County-selected priority noxious weed species will be controlled in the season they are first identified on the mitigation site.	Controlled Fall 2004

[1] Estimated values are presented with their corresponding statistical confidence interval. For example, 5% ($CI_{80\%}$ = 3-8% aerial cover) means we are 80% confident that the true aerial cover value is between 3% and 8%.

Table 1.2 Continued

Additional Permit Requirements[2]	
1. To decrease rodent damage, a two-foot area around each planted tree or shrub must be maintained free of reed canarygrass.	97% weed free, remainder hand weeded Fall 2004
2. The mitigation area shall contain no more than 20% aerial cover of reed canarygrass for the first 5 years of monitoring.	4% ($CI_{80\%}$ = 1% - 6%)

Success Standards and Sampling Objectives

The first year success standards for the SR 90 Sunset mitigation site were excerpted from the *South Sammamish Plateau Access Road and SR 90 Sunset Interchange Modifications Final Wetland Mitigation Plan* (WSDOT 2001). Companion sampling objectives follow the success standards, as appropriate. Appendix A provides the complete text of the success standards, contingencies, additional permit requirements for this project, and required photographs. Appendix B provides the planting plan (WSDOT 2001) and photo point locations.

Success Standard 1
Creation and restoration areas must demonstrate a total of 0.30 acres or more that support wetland hydrology (2004).

Success Standard 2
At the end of the first growing season (2004) all planted material shall be alive and healthy (all dead material will be replaced). (Note: See Appendix A for the related contingency and similar permit requirement.)

USACE Permit Requirement 1
To decrease rodent damage, a two-foot area around each planted tree or shrub must be maintained free of reed canarygrass (2004).

Success Standard 3
The mitigation area shall contain no more than 25% areal (*sic*) cover by reed canarygrass or Himalayan blackberries at any point during the monitoring period (2004-2012).

USACE Permit Requirement 2
The mitigation area shall contain no more than 20% aerial cover of reed canarygrass for the first 5 years of monitoring (2004-2008).

> Sampling Objective 1
> To be 80% confident the true aerial cover of *Phalaris arundinacea* (reed canarygrass) and *Rubus armeniacus* (Himalayan blackberry) on the entire site is within 20% of the estimated value.

[2] The report for the permit requirement about stream survey for proper function and fish passability has been issued separately.

Success Standard 4
All King County-listed Class A, B-designate and County-selected priority noxious weed species will be controlled in the season they are first identified on the mitigation site (2004-2012).

Methods

To evaluate wetland hydrology (Success Standard 1), the site was visited in the early part of the growing season (April and May). Wetland hydrology field indicators were recorded.

To evaluate survival, a total count of woody species was conducted (Success Standard 2). Each stem was identified to species and recorded as alive or dead. In addition, the area within 2 feet of each stem was evaluated for presence of *P. arundinacea* (Permit Requirement 1). Stems with *P. arundinacea* nearby were identified.

The point-intercept method was used to evaluate aerial cover of invasive species across the entire site. Twenty-seven temporary sampling transects were placed perpendicular to a baseline using a systematic random sampling method (Figure 1.1). Twenty-seven 78-meter point-line sample units (156 points each) were randomly positioned along sampling transects (Permit Requirement 2 and Success Standards 4 and 5).

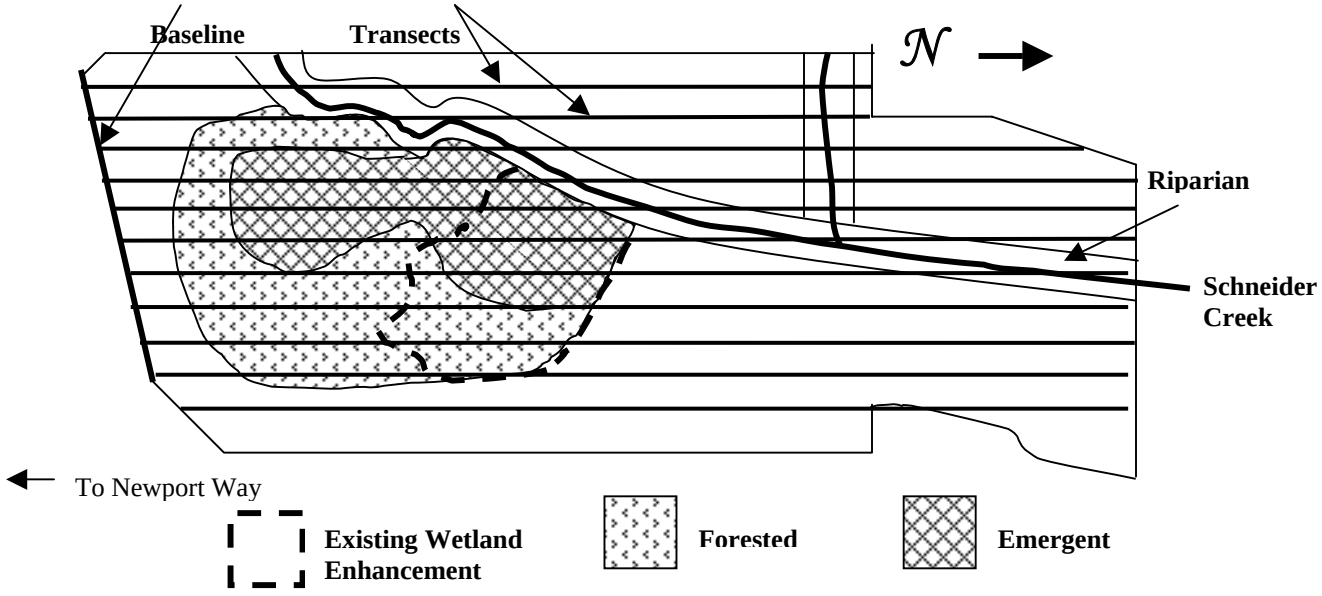


Figure 1.1 SR 90 South SPAR and Sunset I/C Modifications Mitigation Site Sampling Design (2004)

Sample size analysis was conducted using the following equation.

$$n = \frac{(z)^2 (s)^2}{(B)^2}$$

z = standard normal deviate
s = sample standard deviation
B = precision level[3]
n = unadjusted sample size

For additional details on the methods described above, see the Methods section of this report or view WSDOT Wetland Mitigation Site Monitoring Methods at: http://www.wsdot.wa.gov/environment/biology/docs/MethodsWhitePaper052004.pdf

Results and Discussion

This mitigation site is intended to provide feeding, breeding, and resting habitat for birds, small mammals, amphibians, and reptiles. A total of 16 bird species were observed during monitoring activities. Few other signs of wildlife were observed. This may be in part due to the frequent visits by the adjacent landowner's dog and goat, and the age of the site.

The site is also intended to benefit fish in Schneider Creek and its tributary by providing shade and contributing detrital and woody debris. Stream bank willows are relatively dense, average more than 2 meters tall, shed their leaves to the stream system, and partly shade the water surface. Willows will be a future source of woody debris. *Rorippa nasturtium-aquaticum* (watercress), an obligate native species, covers the water surface in the south half of the stream.

Success Standard 1 - Creation Areas Must Support Wetland Hydrology
In early April, the existing emergent area was saturated to the surface and the created emergent area was slightly inundated. In early May, the existing emergent area was dry, and the created emergent area was inundated to 1 decimeter in a small area, with saturation to the surface in an area of approximately 5x7 meters (Photo 1.1). Based on this information, it appears that the wetland hydrology criterion has been met this year. A delineation will be scheduled after monitoring year 5 to confirm the area of wetland created.

Success Standard 2 - All Planted Material Shall be Alive and Healthy
In 2003, we counted 2775 woody plants shortly after they were installed. In Summer 2004, we counted 2231 live woody plants, resulting in a survival of 80%. In early December 2004, 305 woody species were installed as a partial replacement, thus partially meeting the success standard, permit requirement, and contingency. An additional 240 plants are scheduled to be planted prior to 31 Mar 2005.

[3] The precision level equals half the maximum acceptable confidence interval width multiplied by the sample mean.

This count does not include *Alnus rubra* (red alder), *Acer macrophyllum* (bigleaf maple) and *Populus balsamifera* (black cottonwood) volunteers.

USACE Permit Requirement 1 – No *P. arundinacea* within 2 Feet of Each Plant.
For the planted trees and shrubs observed this summer, 2283 (97%) of 2349 were free of *P. arundinacea.* Photos A.1, A.2, and A.4 illustrate this condition (Appendix A). In Fall 2004, plantings were hand weeded and herbicide was applied to re-establish the 2-foot zone so that the Permit Requirement was met.

Success Standard 3 – Less than 25% Cover by *P. arundinacea* or *R. armeniacus*
Aerial cover provided by *P. arundinacea* and *R. armeniacus* on the site is estimated to be 5% ($CI_{80\%}$ = 3-8% cover). A few *R. armeniacus* seedlings are scattered throughout the mitigation site. This meets the requirement for Success Standard 3. *Phalaris arundinacea* was mechanically and chemically controlled, with subsequent herbicide application several weeks later after it re-sprouted.

Permit Requirement 2 – Less than 20% Aerial Cover of *P. arundinacea*
Aerial cover provided by *P. arundinacea* on the site is estimated to be 4% ($CI_{80\%}$ = 1-6% cover). This meets Permit Requirement 2.

Success Standard 4 – Control King County-listed Class A, B-Designate and County-Selected Priority Noxious Weeds
P. arundinacea is a King County Class B or C Noxious Weed of Concern and *R. armeniacus* is an Obnoxious Weed. For cover by these species see discussions above. Aerial cover provided by other King County-listed Class A, B-designate and County-selected priority noxious weeds on the site is qualitatively estimated to be less than 1%. Seven individual plants were encountered on sampling transects. This information was reported to the region for use in scheduling site management activities. This meets the requirement for Success Standard 4.

Table 1.2 2004 Noxious Species at the SR 90 South SPAR and Sunset I/C Modifications Mitigation Site

Scientific Name	Common Name	King County Designation
Phalaris arundinacea	Reed canarygrass	Class B or C Noxious Weed of Concern
Rubus armeniacus	Himalayan blackberry	Obnoxious Weed
Sonchus arvensis	field sowthistle	Class B
Tanacetum vulgare	common tansy	Class B or C Noxious Weed of Concern
Cirsium vulgare	bull thistle	Class B or C Noxious Weed of Concern

Appendix A – Standards of Success

The following excerpt is from the South Sammamish Plateau Access Road and SR 90 Sunset Interchange Modifications Final Wetland Mitigation Plan (WSDOT 2001). The standards addressed this year are identified in **bold** font.

Mitigation Goals

The mitigation plan has the following mitigation goals:

- Designate preserved wetlands and their associated upland buffers as native growth protection easements (NGPE) to provide for long-term protection.
- Compensate for 0.15 acres of impact on forested and emergent wetlands by creating at least 0.30 acres of forested wetlands.
- Enhance existing wetland functions by planting native hydrophytic vegetation.
- Enhance fisheries habitat opportunities in Schneider Creek by installation of in-stream structures.
- Enhance existing low-grade wetland and stream buffers by replanting native vegetation in the disturbed buffer.
- Create hydrologic conditions that support the natural succession of native species.
- Avoid adverse impacts on remaining wetlands and buffers during construction.

While the Schneider Creek system currently provides wildlife and fish habitat, the overall quality and function could be improved using restoration and enhancement of degraded wetland and stream area. The proposed compensatory mitigation for this project is intended to replace wetland types and wetland functions that will be lost due to project construction. Proposed mitigation is anticipated to mitigate loss of the following functions:

- Fish and wildlife habitat: mitigation will increase available habitat for fish and wildlife, increase habitat and floodplain connectivity and provide additional winter refuge for fish.
- Food chain support: mitigation will increase available wildlife forage material and detrital input to Schneider Creek.
- Stream temperature moderation: mitigation will increase shade and canopy closure over the streams, while also enhancing potentials for recruiting large woody debris.
- Flood water attenuation: mitigation will increase the floodplain area.
- Nutrient/contaminant trapping: mitigation will provide an increased area of vegetated floodplain having opportunity to intercept and transform road-

runoff contaminants, fertilizers, herbicides and other pollutants from residential and agricultural activities upstream.

Aside from wetland preservation, a combination of creation, restoration and enhancement activities will be used to obtain these benefits. Overall, these activities will attempt to achieve 0.17 acres of palustrine forested wetland, 0.30 acres of forested/scrub-shrub/emergent wetland and 1.4 acres of wetland and stream buffers as mitigation for the loss of 0.15 acres of palustrine forested and scrub-shrub wetland.

Objectives and Performance Standards

Objective 1: Wetland Areal (*sic*) Extent and Wetland Hydrology

The wetland mitigation actions involving creation and restoration must demonstrate a total of 0.30 acres or more that support wetland hydrology (Table 3). Subsurface seeps were identified by biologists throughout the mitigation site. These seeps will create the wetland hydrology necessary for the success of the mitigation site. However, visual hydrology monitoring in zones of creation and restoration will be conducted in Monitoring Years One, Two, Three, Five, Seven and Ten. The use of monitoring wells is not anticipated.

Performance Standards: Monitoring Years One (2004) through Ten (2013)

PS1. Creation and restoration areas must demonstrate a total of 0.30 acres or more that support wetland hydrology.

Monitoring/Delineation Schedule

A quantification of areal (*sic*) extent of the mitigation wetland will be made during the hydrology monitoring period using standard wetland delineation methodology. The boundary and areal (*sic*) extent of the area supporting wetland hydrology will be compared to the objectives of the mitigation plan.

Potential Contingency Actions

1. Regrade the site to achieve the required acreage supporting hydroperiods that meet the hydrology criterion for wetlands (Environmental Laboratory 1987).

Objective 2: Vegetation

The mitigation program is intended to restore 1.4 acres of wetland and stream buffer (76 percent), enhance 0.17 acres of emergent wetlands (9 percent) and create 0.30 acres of forested wetland (16 percent). Each of these habitats is expected to be dominated by native plant species. Wetland plant communities are expected to appear to be succeeding toward the intended forested and emergent communities.

Performance Standards: Monitoring Year One (one year after planting = 2004)

PS2. At the end of the first growing season all planted material shall be alive and healthy (all dead material will be replaced). The mitigation area shall contain no more than 25% areal (*sic*) cover by reed canarygrass or Himalayan blackberries at any point during the monitoring period.

Performance Standards: Monitoring Years Two (2005) and Three (2006).

PS3. Three years after planting, emergent wetland mitigation areas will be comprised of a planted and native naturally colonizing plant community with 60% or more areal (*sic*) cover involving at least three herbaceous plant species adapted for life in saturated soil conditions (facultative-wet or wetter). Total cover of all pioneering and planted trees and shrubs in the created and enhanced wetland areas will be at least 50% and include at least three species of woody plant species adapted for life in saturated soil conditions (facultative or wetter).

PS4. Three years after planting, upland buffer zones will be comprised of a planted and native naturally colonizing plant community with 50% or more areal (*sic*) cover involving at least three woody plant species.

PS5. All King County-listed Class A, B-designate and County-selected priority noxious weed species will be controlled in the season they are first identified on the mitigation site. Reed canarygrass (a King County Weed of Concern) is expected to be present during the life of this mitigation effort due to the abundant and adjacent source of propagules, as well as the presence of reed canarygrass on the mitigation site. **The enhancement and restoration areas shall contain no more than 25% areal (*sic*) cover by reed canarygrass at any point during the monitoring period.** Long-term management of reed canarygrass is expected to result from establishment of densely vegetated woody (forested) plant communities on the mitigation site.

Performance Standards: Monitoring Year Five (2008), Seven (2010) and Ten (2013)

PS6. Five years after planting, emergent wetland mitigation areas will be comprised of a planted and native naturally colonizing plant community with 75% or more areal (*sic*) cover involving at least three herbaceous plant species adapted for life in saturated soil conditions (facultative-wet or wetter). Total cover of all pioneering and planted trees and shrubs in the created and enhanced wetland areas will be at least 80% and include at least three species of woody plant species adapted for life in saturated soil conditions (facultative or wetter).

PS7. Five years after planting, the buffer will be comprised of a planted and native naturally colonizing plant community with 80% or more areal (*sic*) cover involving at least three woody plant species.

PS8. Areal (*sic*) cover of invasive species (reed canary grass and Himalayan blackberry) will not exceed 20% after monitoring year five.

PS9. During monitoring years seven and ten the mitigation site will continue to uphold performance standards PS6, PS7 and PS8.

Monitoring Schedule

Mitigation plantings will be monitored for ten years by census or sampling of surviving plants. The initial monitoring will occur one year after planting in order to implement the one-year plant survival warranty to be provided by the landscape contractor.

Vegetation monitoring will occur during summer in the second, third, fifth, seventh and tenth years. In addition, **permanent points will be established and marked to photographically document the overall appearance of the mitigation area.**

Potential Contingency Actions

1. **Before the beginning of Monitoring Year One (2004), all dead or unhealthy plants will be replaced (100% survival in Monitoring Year One Performance Standard PS2).**
2. If the site does not meet performance standards PS3 and PS4 (Monitoring Year Three), additional planting will be conducted. Live, containerized plant material will be replanted and monitored to assure that coverage meets performance standards PS6, PS7 and PS8 (Monitoring Years Five, Seven and Ten).
3. If the site does not meet performance standards PS2, PS5 and PS8 (reed canarygrass control) a weed control program would be implemented in order to reduce the amount of reed canarygrass to at least the maximum allowable percentage of areal (*sic*) cover for the given monitoring year (25% for years one, two and three, 20% for years five, seven and ten).
4. For any performance standards not met, resource agencies and the Corps of Engineers will be consulted for advice on further measures to remedy problems at the site. The monitoring schedule will be extended and such reasonable measures will be conducted as necessary to establish appropriate wetland vegetation. WSDOT will perform all reasonable measures considered necessary to establish and maintain a functioning wetland/buffer system that meets the goals and objectives of the monitoring plan.

5. The mitigation plan uses and promotes the growth of native vegetation. King County Class A, B-designate and County-selected priority noxious weed species will be controlled in the season they are first identified on the site.

Objective 3: Wildlife Habitat

Wildlife cover and forage availability for birds and small mammals should increase substantially. Generally, the creation, restoration, enhancement and preservation of forested and emergent wetland habitats are intended to provide feeding, breeding and resting habitat for birds, small mammals, amphibians and reptiles. Such activity will also benefit fish in Schneider Creek and its tributary by providing shade and contributing detrital and woody debris.

Performance Standards: Monitoring Year One (one year after planting)

PS8. All habitat structures identified on the plan have been placed on the site.[13]

Performance Standards: Monitoring Year Three

PS9. Habitat structures identified in the plans are still in place and functional.

Performance Standards: Monitoring Year Five

None.

Monitoring Schedule

Once during Monitoring Years One and Three.

Potential Contingency Actions

1. Install or replace habitat structures that are missing, damaged, lost or non-functional.

MONITORING PLAN

WSDOT's Wetland Mitigation Monitoring Program (Monitoring Program) uses objective-based monitoring to document success and change in WSDOT's wetland mitigation sites. Monitoring protocols are based on specific objectives written in each project's wetland mitigation plan, combined with evaluation of current site conditions. A customized monitoring program is developed for each site. The Monitoring Program uses a variety of ecological monitoring techniques and protocols, including those outlined in Horner and Raedeke (1989) and in WSDOT (2000b). Many standard techniques such as permanent transect lines, plots and photo points are still used. However, the number and placement of those depend on specific site objectives. Locations of photopoints and transects, if used, are not selected until the first year of monitoring. Statistical precision and accuracy are used to determine the number and configuration of transects and sample plots.

[13] Habitat structures were not specified on the planting plan (Appendix B).

After the planting plan has been constructed, Monitoring Year One will commence at the start of the subsequent year. Beginning with the first growing season after construction of the planting plan, the Monitoring Program will monitor the mitigation site for at least ten years. Parameters to be monitored during this ten-year period include hydrology and vegetation, as described above.

Reports for the ten-year monitoring period (including a report for each of Monitoring Years One, Two, Three, Five, Seven and Ten) will be issued to the Corps of Engineers, Washington State Department of Ecology, King County Department of Development and Environmental Services and other appropriate resource agencies for review and comment. Successful mitigation will be measured by attainment of the performance standards described in this mitigation plan document. Monitoring may be curtailed early or reduced in intensity if the mitigation effort meets the stated performance standards earlier than anticipated and is approved by the Corps of Engineers.

CONTINGENCY ACTIONS

WSDOT anticipates the mitigation goal will be achieved by accurately completing the grading and planting plans. However, contingency actions, as described above, may be needed to correct unforeseen problems. Such actions may consist of regrading the site in the case of insufficient hydroperiod or replanting the site in the case of planting failure. However, natural recruitment of native wetland species and upland species (in the buffer) will be counted toward achieving performance standards for Vegetation. Should areal (*sic*) coverage of wetland or buffer plants consistently fall short of desired performance standards, WSDOT will consult with the Corps of Engineers and resource agencies in determining what additional measures could be implemented to ensure establishment of viable wetland and upland plant communities. If warranted, recommendation would e made for replacing dead plants with different native species. If total cover of designated invasive species exceeds the performance standards, then a weed control program would be implemented.

The contingency plan may be enacted in whole or in part, whenever the action is warranted by the monitoring reports. If the desired mitigation goals are not achieved, as measured by the monitoring program and performance standards, then a joint determination by the city, the county, the Corps of Engineers and the project proponent may be made to implement the contingency plan.

NOTE:

Mr. Mull retains ownership of the mitigation site and WSDOT has a conservation easement in perpetuity.

Other Requirements

Four permanent photo-points were established to document overall site development.

Photo-point 1 will be taken from the south center of the top of the concrete wall to the north. In the summer of 2004, riparian vegetation on the banks of Schneider Creek is visible in the background, and the created wetland is just in front of that on the right side. The buffer is in the foreground.

Photo A.1 **Photopoint 1, SR 90 South SPAR and Sunset I/C Modifications mitigation site (August, 2004).**

Photo-point 2 will be taken from the northwest corner of the site to the southeast. In the summer of 2004, riparian vegetation on the banks of Schneider Creek is visible in the mid-ground on the left. The buffer is in the foreground.

Photo A.2 **Photopoint 2, SR 90 South SPAR and Sunset I/C Modifications mitigation site (August, 2004).**

Photo-point 3 will be taken from the north end of Schneider creek to the south. In the summer of 2004, riparian vegetation on the banks of Schneider Creek is visible on the left. The creek is not quite visible in the foreground to the left of center.

Photo A.3 **Photopoint 3, SR 90 South SPAR and Sunset I/C Modifications mitigation site (August, 2004).**

Photo-point 4 will be taken from the corner closest to the adjacent building. In the summer of 2004, the buffer is in the majority of the view, with the eastern edge of the existing wetland visible in the right background.

Photo A.4 **Photopoint 4, SR 90 South SPAR and Sunset I/C Modifications mitigation site (August, 2004).**

Additional Permit Requirements

USFWS Final BO Reference Number I-3-00-F-0642, dated 8 Feb, 2000.
Page 23 BO Point 5:
"All riparian plantings shall be maintained (including weeding) and replaced as needed for a period of at least 3 years to obtain a minimum of 80% survival rate by the end of the third growing season."

NOAA/NMFS ESA Section 7 Formal Consultation NMFS Log No. WSB-99-134, dated 20 April, 2000.
Page 23 Point 4:
The extent of riparian impacts must be minimized and plantings must occur that mitigate for the lost function provided by the trees and shrubs removed by construction.
Page 23 Point 5:
All plantings and mitigation sites must be monitored and meet criteria as described below in the terms and conditions.

These terms and conditions are non-discretionary.
Page 24 excerpts
The monitoring plan as described in the biological assessment[4] and associated document shall be followed and a report documenting the conditions will be prepared and provided to NMFS (Washington Habitat Branch) for review.

b. Monitoring
(3) Plantings are performed correctly and have an adequate success rate.

- Mitigation site monitoring will ensure that mitigation commitments have an adequate success rate to replace the functions they were designed to replace. WSDOT Biology staff will produce post construction and biannual reports on success of mitigation sites, available on request.
- Failed plantings and structures will be replaced, if replacement would potentially succeed. In case of failed design, mitigation will generally be sought on another project in a more appropriate location, and to an extent mutually acceptable to ensure addressing the loss of on-site mitigation.

[4] The stream monitoring report has been issued separately (WSDOT 2004).

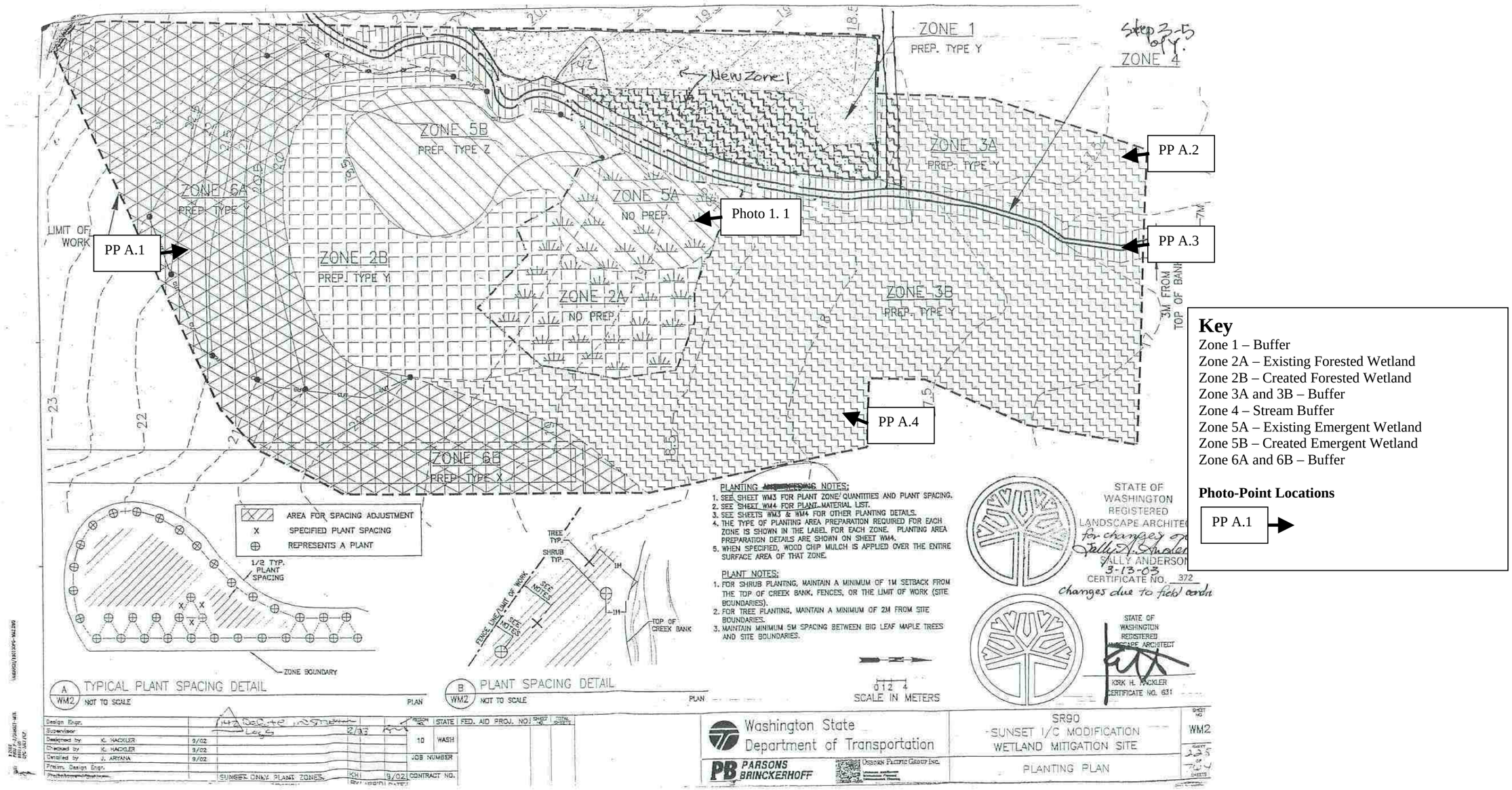
USACE letter Reference No. 200300572, dated 11 June, 2003.
Page 2 paragraphs c, d & e reference the *Final Wetland Mitigation Plan South Sammamish Plateau Access Road ands SR-90 Sunset Interchange Modifications* dated May 2001, and reporting requirements.

According to paragraph e, we are to submit a separate report annually for years 1 through 5 for the emergent system and for years 1, 2, 3, 5, 7, 10 for the forest system. Reports are to be sent to the Seattle District USACE, Regulatory Branch, and must prominently display the reference number 200300572.

Page 3 paragraph f revises the performance standard for *Phalaris arundinacea* (reed canarygrass): The mitigation area shall contain no more than 20% aerial cover of reed canarygrass for the first 5 years of monitoring. To decrease rodent damage, a two-foot area around each planted tree or shrub must be maintained free of reed canarygrass.

Appendix B – As-Built Planting Plan

(modified from WSDOT 2001)



Key

Zone 1 – Buffer
Zone 2A – Existing Forested Wetland
Zone 2B – Created Forested Wetland
Zone 3A and 3B – Buffer
Zone 4 – Stream Buffer
Zone 5A – Existing Emergent Wetland
Zone 5B – Created Emergent Wetland
Zone 6A and 6B – Buffer

Photo-Point Locations

PP A.1 →

Literature Cited

1. United States Army Corps of Engineers. 2000. Nationwide Permit 14 Reference No. 1999-4-01653, dated 16 Aug, 2000. (Expired permit)

2. United States Army Corps of Engineers letter Reference No. 200300572, dated 11 June, 2003.

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